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Occupational hazards in the poultry farms

The basic working environment hazards that affect the health of poultry workers. Characterized means and measures to prevent occupational diseases of workers who perform work on the care and rearing of poultry.

Poultry industry, poultry farm workers, accidental, physical, chemical, biological health hazards, respirators

Worker in the poultry industry are permanently exposed to hazards. These have either a physical, chemical or biological nature. Proper management is needed to avoid accidents and to keep the staff motivated. In all cases, however, safety comes first. The poultry industry has undergone phenomenal growth over the past 20 years, made possible by the continuous dedication of those individuals working in different segments of the industry, including farms, hatcheries, processing plants, and feed mills. These people are subject to occupational and environmental hazards on a daily basis. Airborne exposure, injuries, and zoonotic infections are amongst the main categories of health hazards. Farm employees, especially new and untrained ones, are usually at a greater risk. Also, those who live near to poultry farms, hatcheries, and processing plants can also be exposed to health hazards through air, water, and soil [1].

Short- and long-term. Public awareness is of critical importance in this regard. 55% of individuals participated in the study were not concerned about the waste (manure, feathers, dead birds, etc) produced by the poultry industry. Waste was a concern for only 36% of the respondents. However, it seems that people are starting to become more aware of health issues related to poultry environments. The main objective of this article is to re-emphasise the crucial importance of minimising health hazards for

employees in commercial poultry production settings. Both employees and employers should be aware of short- and long-term consequences of occupational hazards. Common occupational hazards in different sectors of the poultry industry (e.g. farms, hatcheries, processing plants, and feed mills) include dust/gases, musculo-skeletal disorders (traumatic injuries), infectious diseases, and exposure to chemical, biological, and physical agents. Poultry producers are often more concerned about the health and productivity of their flocks than of health hazards to themselves or their employees.

Common health hazards. Health hazards in poultry working environments are categorised as accidental, physical, chemical, and biological. Here are just a few examples for each category mentioned by this organisation:

Accidental:

- Sprains and strains due to slip and fall while carrying heavy loads.
- Eye and skin irritation resulting from contact with disinfectants, vaccines and medicines.
- Burns from exposure to hot surfaces (e.g. beak-trimmers).

Physical:

- Exposure to high levels of noise.
- Long-time exposure to heat and cold due to outdoor work.
- Musculo-skeletal problems resulting from lifting and moving of animals, feed bins (bags), egg collection.

Chemical:

- Respiratory problems resulting from exposure to dust, which is composed of feathers, dander, micro-organisms, etc.

- Respiratory, skin, and eye diseases due to exposure to gases including NH₃, H₂S, CO₂, CO, and CH₄.

- Exposure to disinfectants, detergents, formaldehyde and pesticides.

Biological:

- Zoonotic infections. These diseases are transmitted between birds and humans.

- Antibiotic-resistant bacteria.

Respiratory problems. Respiratory hazards are usually categorized as smoke and fumes, sprays and mists, dusts, and gases and vapors. Smokes and fumes are very tiny solid particles suspended in the air. They can be generated from welding to burning plastic materials. Sprays and mists are small liquid droplets that occur from spraying pesticides, paints, disinfectants, etc. Dusts are suspended solid particles ranging greatly in size. Dusts can be generated from grinding, milling, drillings or created in the poultry house or in a dusty field. Gases and vapors are molecules in the air and are typically found in confined spaces. Examples in the poultry house include ammonia and carbon monoxide from engine exhaust of tractors or skid steer loaders. Many studies have shown that poultry farmers have a greater risk of respiratory problems than non-farmers. For example, results of a study showed



that poultry farm workers experienced more chronic phlegm and wheezing than non-farm workers. Another study poultry farms showed that poultry growers and catchers were exposed to high levels of dust and ammonia. Each poultry house contains its own complex mixture of dusts and gases. Nature of this mixture is dependent on numerous factors including ventilation, type of poultry, feeding system, and waste management. Dust and gas levels are usually highest in winter. Organic dust is the most common respiratory contaminant. Organic dust is a combination of dusts with bacteria or fungi (fungal spores) [2].

Ammonia is prevalent in most poultry houses and especially during the winter months. It is produced from the breakdown of nitrogenous compounds and characterized by a sharp and pungent odor. Ammonia concentrations can be particularly damaging to your health during periods of minimum ventilation. This can be between flocks when the house is closed or during the brooding period. Ammonia is considered an irritant and readily impacts the eyes and respiratory tract. Ammonia can increase the susceptibility of the respiratory system to airborne pathogens. This is due to impaired mucus flow and ciliary action in the upper respiratory tract which is the first-line of disease defense in humans and poultry.

Recent research has shown that ammonia levels can easily exceed OSHA recommended levels. The

recommended level for short-term exposure (15 minutes) is no greater than 35 ppm. Unfortunately, many poultry growers who have worked in an ammonia-laden environment for years are unable to detect ammonia below 50 ppm.

If you fall in this category of individuals, there are several methods of detecting ammonia. These include litmus paper, detection tubes and electronic devices. Accuracy, ease of operation and calibration, and cost are factors to consider in the selection of ammonia detection devices best suited for your needs.

Ammonia is an irritating gas present in poultry barns. The occupational threshold for ammonia is generally 25 ppm. For short-term exposure (15 minutes), the threshold is 35 ppm. An ammonia concentration of 300 ppm is immediately dangerous to life. People who have worked in poultry barns for years often can not detect levels below 50 ppm. Harmful gases in poultry houses are not limited to ammonia. H_2S , CO_2 , CO , CH_4 and vapours (associated with pesticides, disinfectants, and litter treatments) are also present and can cause health problems [3].

Exposure to dusts and gases results in responses in the respiratory system. These responses vary from one person to another, and may affect any part of the system. Potential responses include acute or chronic bronchitis (the most common reaction), increased airways reactivity, asthma, and chronic air-

way obstruction.

Types of Respirators. Disposable particulate respirators or dust masks protect against dust particles and some mists. All particulate respirators approved under the newest testing requirement will have a certification label. They are made of a shaped piece of filter material held to the head by two straps. Chemical cartridge respirators protect against gases and vapors by using one or two replaceable cartridges containing a substance that absorbs specific gases and vapors. These respirators also come with replaceable pre-filters. These cartridges are color-coded for removal of different gases. In general, black cartridges are used for filtering organic vapors while the green are for ammonia. Powered air-purifying respirators pull ambient air through a filter and into the face piece. A rechargeable battery pack attached to the belt of the wearer. This kind of respirator is especially good for individuals with heart and lung conditions who might not be able to use other respirators, or for individuals with beards or sideburns who cannot get a good fit with other respirators.

Poultry processing plants. A typical poultry processing plant can process tens of thousands of chickens per day. Common complaints include warts, infections from bone splinters, and rashes from the chlorine water (used to wash carcasses contaminated with faeces). Employees have to do a lot of fast and repetitive movements. They often suffer from injuries caused by the knives, saws and machinery. Cuts and lacerations are continuous hazards for workers frequently handling knives. Other injuries are also common. Occupational Safety and Health Administration (OSHA) support effective efforts by the poultry industry to protect the safety and health of employees. It is the employer's responsibility to provide a safe workplace for employees. This starts with knowing what processes or substances in your workplace could hurt workers. According to an OSHA study, back injuries account for 40% of all poultry processing



plant injuries. Workers who cut or pull the meat from the bone use quick and repetitive motions that put pressure on their wrists and hands. This situation makes these people vulnerable to debilitating conditions of the nerves, muscles, and tendons. Carpal Tunnel Syndrome is the most severe type of such disorders [4].

When the tendons passing through a narrow channel in the wrist (the carpal tunnel) are overused, they swell and press on the nerve that controls feeling in the hand. 50% of workers reported three or more ongoing problems in the upper extremities, including decreased vibration sensitivity in their fingertips, impaired pinch strength, and numbness.

Zoonotic infections. Zoonotic diseases are transmitted from animals to humans and include bacterial, viral, fungal, and parasitic diseases. Salmonellosis, campylobacte-

riosis, chlamydiosis, tuberculosis, Newcastle Disease, and avian influenza are amongst the most common zoonotic diseases transmitted from poultry to humans. Poultry workers are at a greater risk of being affected by these diseases.

These and other health hazards in poultry commercial settings must be addressed through improvement in the working environment. In order to achieve this very important goal, both employers and employees are responsible. Training of employees plays a vital role in reducing the occurrence of these problems. Always know your work environment, the contaminants, and the potential hazards. Safety must always come first.

Проаналізовано основні небезпеки виробничого середовища, що негативно впливають на здоров'я працівників птахофабрик. Охарактери-

зовано заходи та засоби щодо недопущення розвитку професійних захворювань працівників під час виконання робіт з догляду та вирощування птиці.

Індустріальне птахівництво, працівники птахофабрик, випадкові, фізичні, хімічні, біологічні небезпеки, респіратори

Проанализированы основные опасности производственной среды, негативно влияющих на здоровье работников птицефабрик. Охарактеризованы мероприятия и средства по недопущению развития профессиональных заболеваний работников во время выполнения работ по уходу и выращиванию птицы.

Индустриальное птицеводство, работники птицефабрик, случайные, физические, химические, биологической опасности, респираторы

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